REMARKS

Claims 1-17 are pending in the application with claims 1, 14 and 15 being independent. Independent claims 1, 14 and 15 are amended herein to more particularly define the claimed inventions. No new matter as been added. Reconsideration of the application is respectfully requested in view of the amendments and following remarks.

Acknowledgement of Foreign Priority
And Receipt of Certified Document

In the Office Action Summary of July 21, 2006, the Examiner has again indicated that none of the certified copies of the priority documents have been received. This appears to be in error. Applicants request the Examiner's acknowledgement of Applicants' claim for foreign priority under 35 U.S.C. §119 and the receipt of the certified copy of the priority document that was filed July 7, 2004. The claim for priority expressly appears on the Image File Wrapper (IFW) and the priority document appears to be the listed artifact in the IFW. If there is indeed an issue with the priority document, a clear explanation is hereby requested as to the specific nature of the problem. Applicants believe the submission of the certified copy has been accomplished and has been recorded by the Office.

35 U.S.C. §103(a) Rejections

Claims 1-2 and 13-14 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 7,012,405 to Nishida, *et al.* ("Nishida") in view of U.S. Patent No. 5,675,816 to Hiyoshi, *et al.* ("Hiyoshi"). Claims 3-5 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Nishida in view of Hiyoshi as applied to claim 1, and further in view of U.S. Patent No. 6,124,700 to Nagai et al. ("Nagai"). Claims 6-7 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Nishida in view of Hiyoshi, and further in view of U.S. Patent No. 6,483,272 Terada *et al.* ("Terada"). Claims 15-17 have been rejected under 35 U.S.C. §103(a) as being

unpatentable over Nishida in view of U.S. Patent No. 6,522,102 to Cheiky et al. ("Cheiky"). Applicants respectfully traverse each of these rejections.

Referring the Examiner now to MPEP § 2143, titled "**Basic Requirements for a *Prima Facie* case of Obviousness**", the MPEP mandates that:

> *To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claimed limitations.* (Emphasis added)

Applicants submit that the Nishida and Hiyoshi references do not disclose or suggest all the limitations of the invention of independent claims 1 and 14, either singly or in combination. Moreover, the combination of Nishida and Cheiky fail to disclose all the claimed limitations, and Cheiky actually teaches away from the invention of independent claim 15. Hence there has been no *prima facie* case of obviousness demonstrated.

Amended independent claim 1 recites, in part:

> *a battery voltage detecting circuit that detects a voltage level across the battery before charging the battery;*
>
> *a control device that always selects one of the predetermined number of voltages with any being selectable depending upon the detected voltage level across the battery before any charging of the battery and then controls the switch to turn ON so that a rush current does not flow in the battery at the start of charging..* (Emphasis added)

Applicants respectfully submit that several features required by claim 1 are not disclosed or suggested by the combination of the Nishida and Hiyoshi references.

Claim 1 requires that the control device that always selects one of the predetermined number of voltages with "any being selectable depending upon the detected voltage across the battery before any charging of the battery."

With respect to the primary reference, Nishada either pre-charges with a constant current if the battery voltage is not greater than V1, as shown in Figure 3, steps S2 and S3; or, if the battery level is greater than V1 at step S2, then constant voltage E1 is applied at step S4. This sequence demonstrates that voltage E1 is always applied for charging, if the battery voltage is greater than V1. If the battery voltage is not greater than V1, a constant current is applied for pre-charging (pre-charging is a type of charging). Therefore, Nishida cannot anticipate amended claim 1, and specifically fails to disclose: "a control device that always selects one of the predetermined number of voltages with any being selectable depending upon the detected voltage level across the battery before any charging." (Emphasis added).

Figure 1 of Nishida schematically shows a constant voltage generation circuit 21 that applies constant voltages E1, E2, and E3 to a voltage switch circuit 22. One of the three voltages E1, E2 and E3 is selectively applied to the non-inverting input terminal of an operational amplifier 23. As stated previously, in the flowchart shown in figure 3, voltage E1 is selected after pre-charging (S3) with a constant current (or if no pre-charging is necessary) and then voltage E3 is selected after charging the battery with the voltage E1. As such, in Nishida, selection of the constant voltages is performed during the charging sequence, which is different from the requirements of claim 1.

Hiyoshi fails to supply the missing limitations of Nishida. Hiyoshi discloses restricting a rush current which may flow before a start of the charging. However, Hiyoshi fails to disclose or suggest "a battery voltage detecting circuit that detects a voltage across the battery before charging the battery." In Hiyoshi, although it is contemplated to restrict the rush current, the way to achieve the restriction is completely different from the invention of claim 1. Claim 1 requires a control device that always selects one of the predetermined number of voltages with any being

selectable depending upon the detected voltage across the battery before any charging of the battery. Hiyoshi does not disclose or suggest this feature.

Amended claim 14 recites, in part:

> a power supply that produces more than two different predetermined number of voltages each different in level for applying a selected one of the predetermined number of voltages to a battery prior to any charging with any of the predetermined number of voltages being selectable based on a detected voltage level across the battery, the predetermined number of voltages including a highest voltage and a lowest voltage. (Emphasis added)

For many of the same reasons discussed in relation to claim 1 above, neither Nishida nor Hiyoshi disclose or suggest all these limitations, either singly or in combination.

Applicants respectfully submit that for at least the reasons stated above, claims 1 and 14 and those claims depending therefrom are allowable.

Turning now to independent claim 15, Applicants respectfully submit that Nishida fails to disclose all limitations of claim 15, for many of the same reasons as discussed in relation to claim 1 above. Specifically, claim 15 recites, in part:

> *a control device that always selects one of the predetermined number of voltages to be applied to the battery prior to any charging with any of the predetermined number of voltages being selectable based on the detected voltage level across the battery.* (Emphasis added)

Nishida either precharges with a constant current or applies voltage E1 to begin a charging process (see Nishida Figure 3, steps S2-S4, in view of col. 11, lines 9-23). Nishida therefore fails disclose or suggest "a control device that selects one of the predetermined number of voltages to be applied to the battery prior to any charging with any of the predetermined number of voltages being selectable based on the detected voltage level across the battery." Cheiky also fails to supply these limitations.

Furthermore, the Examiner admits that Nishida does not disclose a "first step of selecting a voltage having the third voltage level before the battery is connected" and looks to Cheiky to provide the missing limitation. Moreover, Cheiky does not provide or suggest these missing limitation as alleged by the Examiner, and in fact teaches away from the invention of claim 15.

Independent claim 15 recites, in part:

> a power supply circuit that produces a predetermined *number of voltages having a first level, a second level which is lower than the first level and a third level which is lower than the second level, and a selected one of the predetermined number of voltages being applied to the battery;*
>
> *first step of selecting a voltage having the third level before the battery is connected;*
>
> *second step of selecting a voltage from the first, second and third levels to be applied to the battery after the battery is connected, depending upon the voltage across the battery detected by the battery voltage detecting circuit; and*
>
> *third step of selecting a voltage having the first level to be applied to the battery after the second step.* (Emphasis added)

Applicants disagree with the Examiner's assertion on page 7 of the Office Action dated July 21, 2006, that Nishida discloses: "second step of selecting a voltage from the first, second and third levels to be applied to the battery after the battery is connected, depending upon the voltage across the battery detected by the battery voltage detecting circuit." This second step of claim 15 requires the selection of a voltage from three levels (first, second and third) depending on the voltage across the battery detected by the battery voltage detection circuit. However, Nishida does not disclose such capability. For example, at col. 11, lines 21-23 in reference to Fig. 3, step S4, Nishida discloses that

the voltage E1 is applied to the battery to perform charging (this is the first voltage for charging). At lines 24-34, Nishida discloses at step S5 a check if the battery voltage exceeds a voltage E1 and if so, then at S6, voltage E3 is selected. However, this does not fulfill the requirements of claim 15. Claim 15 requires: "second step of selecting a voltage from the first, second and third levels to be applied to the battery after the battery is connected, depending upon the voltage across the battery detected by the battery voltage detecting circuit." Nishida does not select from among three voltages depending on the voltage across the battery detected by the battery voltage detecting circuit. Rather, Nishida always selects voltage E3, and cannot select from among three voltages, depending upon the voltage across the battery detected by the battery voltage detecting circuit, as required by claim 15.

Furthermore, Cheiky does not provide or suggest the missing limitation as alleged by the Examiner, and in fact teaches away from the invention of claim 15. Cheiky is directed to a battery charging method and system wherein in an embodiment utilizing three voltages (e.g., Fig. 2), a battery may be charged at a first voltage for a first duration (step 112), charged at a second voltage for a second duration (step 113), checking if the battery is fully charged (step 114) (or if total charge time exceeds a third time duration) and, if so, setting the voltage to a third voltage (step 116).

However, contrary to the Examiner's assertion on page 7 of the Office Action that Chieky is teaching a first step of selecting a voltage level from the third level before the battery is connected, Cheiky is actually disclosing selecting from the second voltage level, as the first step. A careful examination of col. 10, lines 5-26 shows this clearly. At line 6 (step 1), and following lines, Cheiky states to charge at the first voltage which is substantially equal to voltage V2 (208) which is substantially equal to the second plateau (of Fig. 3), for the first time duration T1. Clearly V2 (208) is not the lowest voltage in Fig. 3, rather, V1 (210) is the lowest of the three voltages. Further, Cheiky discloses at col. 10, lines 12-17, to then charge at the second voltage V3 (209) for duration T2. Voltage V3 (209) is the highest voltage. At col. 10, lines 20-25, Cheiky then discloses

charging at the third voltage V1 (210), which is the lowest voltage, prior to ceasing battery charging. Clearly, Cheiky discloses that the second voltage level (V2) is selected first, followed by V3 (highest), and then followed by V1 (lowest). This disclosure is different from the requirements of independent claim 15.

Applicants submit that neither Nishida nor Cheiky, nor any other art of record, either singly or in combination, disclose or suggest all the limitations of independent claim 15. Applicants submit that independent claim 15, and those claims depending therefrom, are now allowable.

The Examiner relies on Nagai to allegedly provide a missing limitation of Nishida and Hiyoshi in regards to claims 3-5 of controlling the switch to turn on after expiration of a predetermined period of time form a time when the voltage is equal to or close to the voltage detected by the battery voltage detecting circuit. However, although Applicants disagree with this assertion, claims 3-5 depend from an allowable independent claim 1 and therefore are allowable for at least this reason.

The Examiner relies on Terada to allegedly provide a missing limitation of Nishida and Hiyoshi in regards to claims 6 and 7 of a battery connection detecting device that detects the battery is connected for being charged. However, although Applicants disagree with this assertion, claims 6 and 7 depend indirectly from an allowable independent claim 1 and therefore are allowable for at least this reason.

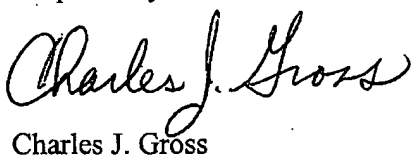
The 35 U.S.C. §103(a) rejections should now be withdrawn.

CONCLUSION

In view of the foregoing remarks, Applicants submit that all of the pending rejections has been properly addressed or rendered moot, or alternatively, in better condition for appeal. The Examiner is respectfully requested to promptly pass the above application to allowance issue.

The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicant hereby makes a written conditional petition for extension of time, if required. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 23-1951.

Respectfully submitted,



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